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XLV. *Transitus Veneris & Mercurii in eorum Exitu è Disco Solis, 4to Mensis Junii & 10mo Novembris, 1769, observatus. Communicated by Capt. James Cook.*

Read Nov. 21, 1771. **I**NSTRUMENTA quæ observandis hisce phænomenis utrisque destinaveram, erant sequentia: horologium nempe Astronomicum à Domino *Shelton* fabrefactum, sed pendulo & anchorâ Domini *Graham* instructum: quadrans porro astronomicus, cujus radius est $2\frac{1}{2}$ pedum, à Domino *Dollond* confectus: telescopium denique Gregorianum trium pedum, micrometro objectivo sive heliometro instructum, atque ab eodem confectum, quod maximè excellit.

Quod ad pendulum supradictum, quo ferè per septennium usus sum, motus ejus oscillatorius, qui motum solis medium exactè sequitur & indicat, quemque per plures altitudines æquales solis & fixarum, ante & post habitam observationem denuò examinavi, in metiendis minutis secundis vere *ισόχρονον* est, et in eo ita uniformiter procedit, ut ab uno solstitio ad alterum vix tribus secundis ab illo recedat.

Quadrantem porrò probè examinatum, qui in ejusmodi quoque observationibus magni momenti est, & ab astronomis vulgò applicari solet, huic ipsæ observationi eum in finem destinaveram, ut in horologio differentiam temporis elapsi inter mutuos limborum solis & planetarum contactus ad fila ferica, in communi vitrorum foco tensa, habere atque eo ipso differentiam altitudinis & azimuthi inter solis & planetarum centra determinare possem; observato enim tempore elapso inter contactum limbi solis & planetæ ad unum idemque filum, concluditur inde differentia altitudinis eorum, si nempe fuerit filum horizontale; differentia verò azimuthi inter utrumque eodem modo concludetur, si filum fuerit verticale. Denique ex observata ejusmodi differentia altitudinis & azimuthi inter centra solis & planetæ, ipsam quoque differentiam longitudinis & latitudinis inter utrumque, tempore observationis habitæ, deducere licet.

Sic equidem methodo prædictâ situm & motum Veneris ac Mercurii, non tam in disco Solis, quam in ipsa eorum orbita, ope quadrantis determinare studui. Illud ipsum verò præprimis ope micrometri objectivi efficiendum putavi, ut nimirum distantias planetæ à proximo limbo Solis in ejus disco successive metiri possem; à quo elemento cætera pendent: quam quidem methodum præ cæteris exactam præferendam duco.

Interim eventus spem frustravit; vota & conamina in utroque casu irrita fuere, neque unicam ejusmodi sive Veneris sive Mercurii observationem in eorum transitu obtinere potui; cælum namque minus serenum jam ab exoriente Sole ad horam usque octavam (in transitu Veneris) mutabilem valde faciem præbebat,

bebat, et aliquando nubibus prorsus obductum erat: sed faciem brevi post mutavit, Solisque imaginem, quæ antea vix per aliquot minuta distinctè videri poterat, nunc ad finem usque phænomeni pleno quasi jubare conspiciendam dedit.

Cælo ita favente, exitum Veneris è disco Solis, telescopio supra dicto, clarè, distinctè, nec minus accuratè, hunc in modum observari :

1769 4 Junii ante me- ridiem	{	Contactus interior sive initium exitus videbatur	h ' "
			8 30 13
	{	Contactus exterior sive exitus totalis visus	8 48 31

Eadem cœli facie serenâ, eodemque successu exitum quoque Mercurii observare licuit: nempe

10 No- vembris ante me- ridiem	{	Contactus interior sive initium exitus videbatur	7 33 32
	{	Contactus exterior sive exitus totalis visus	7 35 11

Tempora in utroque transitu hic notata, ubique tempus verum indicant. Cæterum plura de his videantur in *Actis Societatis Scientiarum Batavæ*, quæ *Harlemi* floret[a].

Situm geographicum observatorii non ita pridem exstructi, sive ejus *latitudinem* & *longitudinem*, exactè (ni fallor) determinavi.

Prior sive *Elevatio Poli Antartici* in illo, per plures altitudines Solis meridianas & quidem solstitiales, nec non fixarum aliquot, determinata quam proximè accedit ad 6° 10'.

Posterior autem, sive *differentia meridianorum* hoc inter & Regium observatorium Parisiense, per aliquot immersiones & emersiones primi satellitis Jovis, per eclipses binas lunares, atque per occultationem fixæ à

Luna, determinata, inventa fuit $104^{\circ} 30'$, five in tempore $6^h 58'$.

Observationes eum in finem habitas, nondum quidem in Europam transmissi, brevi autem & infra paucos dies ad Societatem Batavam, volente Deo, transmittentur.

Bataviæ, in Observatorio } 25 Decembris
recens exstructo. } 1770.

Johan Maurits Mohr,
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Received